Preparation of Local Total Maximum Daily Load (TMDL) Implementation Plans for the Oconee River Basin

Narrative Overview

Allen Creek Watershed
Walnut Creek Watershed

Background

Allen Creek and Walnut Creek both begin in Hall County. Both creeks have a beneficial water use classification of fishing and are currently listed as impaired water bodies. The degree of impairment is classified as not supporting use and partially supporting use. Only two small tributaries to Allen Creek are listed as not supporting use. Another set of two small tributaries to Allen Creek are listed as partially supporting use. The main stem of Allen Creek that is impaired is listed as partially supporting use. In the Walnut Creek watershed, there are a total of 5 impaired segments, but this plan only covers 3 of the 5 impaired segments. The segments that have been left out are E.T. Creek and North Walnut Creek. They have already been covered in previous plans.

Existing TMDL and Monitoring Data

Two sources of data are currently available to determine the existing levels of fecal coliform present in the eight impaired segments. These two sources were used to calculate and calibrate the model used to determine the TMDL (See Attachment A). The data sources include the data from the United States Geological Survey (USGS) station 02216968 and the data from the City of Gainesville's Environmental Services Laboratory (See Attachment B).

The first source of data is the USGS station 02216968, which is located on the Candler Road bridge crossing Allen Creek. The data from the Candler Rd station is based on sampling that was performed from April 1999 to July 2000. The data resulted in a summer and winter fecal coliform 30-day geometric mean of 1,941 colonies / 100ml and a winter fecal coliform 30-day geometric mean of 366 colonies / 100ml. Again, the standard is 200 colonies / 100ml.

The second source of available data was obtained from 1991 and 1998 monitoring data from the City of Gainesville. The data contains samples taken at various locations on tributaries throughout the city. This data was not available at the time of writing this plan.

Current data is needed to identify current source pollution within the watershed. Local expertise and involvement from environmental agencies, federal agencies, schools and universities, and other sources will plan critical roles in identifying sources and reducing fecal coliform levels in these two watersheds. The City of Gainesville is currently working hard to eliminate various pollution sources so that Allen Creek and North Walnut Creek (and all of the tributaries) can be removed from the 303(d) list.

Land Use

The Allen Creek impaired segment drains approximately 12,066 acres. According to 1996 land use data, 50% of the watershed is considered to be deciduous forest and another 10% is considered to be mixed forest. Allen Creek Wildlife Management Area is located in the middle of the watershed. It is a beautiful area that used to be agricultural, but recently it has been converted into a public mixed forest/green space. Agricultural pastures and hay fields make up 14% of the watershed, and row cropland make up approximately 9%. There are five landfills in the watershed. Since the 1996 land use data does not include landfills, a draft coverage of landfills had to be created by heads-up drafting on top of the aerial photos from 1998. Approximately 390 acres or 2-3% is being used as landfill space in the watershed. It is estimated that other important land uses are high intensity commercial/industrial sites and quarries or strip mines at about 1-2%.

The North Walnut Creek impaired segment drains approximately 728 acres. According to the 1996 land use data, 46.3% of the watershed is considered to be deciduous forest and another 19% is mixed forest. Chicopee Woods is located in the northern portion of the watershed. It is a beautiful area that used to be agricultural, but recently it has been converted into a public/private mixed forest/green space. The Chicopee Woods golf course is located in Chicopee Woods. Just south of the golf course are new residential subdivisions that have been constructed within the last 2-3 years. The 1996 land use data may seem out of date for the reason. There is a need for more accurate land use data.

Possible causes of increased levels of fecal coliform into the stream segments include: human waste from sewage leaks or septic tanks, domestic animals, urban wildlife, livestock, or rural wildlife. Continuing monitoring and analysis of current data collected as a part of the implementation plan will be necessary to determine the actual source of the fecal coliform bacteria.

Existing Regulatory or Voluntary Actions

One of the pollutant control tools that exists in Hall County and in the City of Gainesville is the Erosion Control and Sedimentation Ordinance. All of these local governments adopted the State of Georgia model ordinance that established stream protection measures for certain construction sites. Hall County has adopted the watershed protection ordinance. This ordinance establishes stream buffers of 50 feet for perennial streams and 25 feet for intermittent streams. Septic tanks or any kind of land disturbing construction cannot be installed within these buffers without a variance. Exemptions include agriculture, forestry, and already established structures. The city of Gainesville has not established a watershed protection ordinance, but they plan to do so after they establish a storm water utility. Both the city of Gainesville and Hall County administer zoning ordinances.

The Hall County Health Department, through rules and regulations established by the Georgia Department of Human Resources, administers the review and placement of septic systems for residential, commercial, and industrial land uses.

Georgia is in the process of implementing a watershed approach to water resources management through River Basin Management Planning. River basin planning is the

foundation for implementation of water protection strategies in Georgia. This approach provides the framework and schedule for actions to address the waters on the Georgia 303(d) list. The basin planning program is based on legislation in 1992 (O.C.G.A. 12-5-520) by the Georgia Assembly which calls for the GA EPD to develop river basin management plans for each of the major river basins in Georgia. The Oconee River Basin Management Plan was last revised in 1998.

Through the Stormwater Permitting program required by US EPA and managed by GA EPD, Hall County and the City of Gainesville have submitted to GA EPD their Notice of Intent to implement their Phase II stormwater permit, which requires certain stormwater control practices.

The Georgia Adopt-A-Stream program maintains four underlying principles: to increase public awareness of the state's nonpoint source pollution and water quality issues, to provide citizens with the tools and training to evaluate and protect their local waterways, to encourage partnerships between citizens and their local government, and to collect quality baseline water quality data. The Georgia Adopt-A-Stream Program in Hall County / city of Gainesville began in 1994 with the help of the city of Gainesville's Environmental Services department and the Friends of the Parks. Currently, there is a new Adopt-A-Stream group called the Chicopee Woods Watershed Group, and they are managed by Elachee Nature Center's staff.

The Metropolitan North Georgia Water Planning District (MNGWPD) has developed a Watershed Management Plan that will affect all counties and cities in the Metro Atlanta area, which will include all of Hall County. The district watershed management planning program is based on legislation in 2001 (SB 130) that recognized the need to carefully and cooperatively manage and protect the rivers and streams of the metro regions. Each member of the district will have to implement the watershed management plans after they are approved by officials.

Another voluntary action is the study by the Georgia Mountains Regional Development Center (GMRDC) in Gainesville, Georgia. Their study involves an analysis of existing water protection programs and the development practices at the local level. It includes the creation of a watershed atlas and the development of a regional watershed management plan. Also, GMRDC will be working with Georgia Department of Community Affairs in land use data updates and pollution source identification and grant writing.

Hall County and the city of Gainesville have partnered with Georgia Department of Community Affairs in the WaterFirst program, which will assist Hall County and the city of Gainesville in effective water quality education programs.

There are no agriculture regulations. The Natural Resources Conservation Service and the Soil and Water Conservation Commission provide assistance to farmers who are in need of technical help in either obtaining grant funds to correct structural problems affecting regional water quality or obtaining actual comprehensive nutrient management plans. Comprehensive nutrient management planning is currently being done for agricultural sectors.

The US EPA and the GA EPD are working to install a permitting system that will help manage agricultural sectors that have been designated as Medium-sized to Large-sized through the National Pollutant Discharge Elimination System (NPDES).

Recommended Regulatory or Voluntary Actions

Implementation of measures to address the TMDL involves the cooperation of all landowners and land users in the watershed; therefore, broad awareness and involvement are very important to the success of the implementation plan. Through careful land use planning and the use of improved management practice, impacts of erosion and stormwater runoff can be minimized. Stormwater runoff can be improved through methods like erosion control and the establishment of green spaces, park lands, and stream buffers. In some cases, the County and the City are more than cooperative and responsible for watershed protection, like the Allen Creek WMA and the Chicopee Woods green space areas; MNGWPD watershed management planning; Phase II Stormwater management; and water quality monitoring of the Gainesville Environmental Services program. In some other cases, however, the industrial and commercial industries have not been cooperative and responsible for watershed protection. As the new MNGWPD plans get adopted by the county and the city, and as the new Phase II Stormwater permit goes into effect, and as the City of Gainesville prepares to institute a stormwater utility, water quality in Allen and Walnut Creeks should improve in the future, and these listed segments may be taken off the list.

Schedule for Implementing Management Measures

In order to establish an effective TMDL implementation plan, an implementation schedule must be carefully adhered to. A stakeholder group for the Allen Creek and Walnut Creek drainage basins has been established by GMRDC and Elachee Nature Center. This group will be instrumental in the identification of potential sources of fecal coliform in the area and in the development of potential measures to reduce or eliminate the excessive levels of fecal coliform present in the creek. A stakeholder group of land owners, business owners, government officials, elected officials, and environmental activists has been formed to help identify the problem and to help implement identified solutions through peer pressure. The list of existing Stakeholders is in the plan.

During the first year, this group of stakeholders must actively work together to continue to identify remedial measures and potential funding sources necessary to help the county and the city identify where the pollutants enter the streams. Many programs have come together to implement some remedial measures, and they will be aiding the restoration. Initial best management practices must be established, and initial implementation of the current and new plans must begin in the first year. Education programs in the schools and throughout the community must be implemented as soon as possible during the first year of the plan. Education programs will be occurring with the help of WaterFirst and the MNGWPD. Monitoring and status reports of any improvement or worsening of the fecal coliform levels must be implemented within the first year. Any illicit discharges must be detected and eliminated as soon as possible.

By the second year of the implementation plan, data from the summer season and winter season will be available and preliminary sources of fecal coliform should be identified and analyzed. Management programs, BMPs, monitoring and evaluation of data, and periodic revisions of the TMDL implementation plan must continue throughout the five-year implementation plan. If the fecal coliform levels remain above the targeted levels during the fifth year of the plan, the process of developing a more stringent Second plan should begin during the year five. This Second plan should include septic tank inspections and agricultural BMP installation via the Georgia Section 319 program.

Monitoring Plan

Water quality monitoring is a critical component in determining the success of the implementation plan. Monitoring helps determine compliance with regulations, major sources of loadings, and the effect of the regulatory and voluntary measures implemented in the drainage basin. No two watersheds are alike. Allen Creek watershed is currently being sampled by the USGS station. North Walnut Creek is currently being sampled quarterly by the Gainesville Environmental Services staff. Therefore, the monitoring of the particular watershed, rather than relying on computer model data, is critical to determine the fecal coliform levels actually present in the impaired water body.

Levels of fecal coliform in the impaired segments and in the main stem of the creeks will be monitored by standard periodic grab sampling to calculate an instream 30-day geometric mean fecal coliform. Sampling should be scheduled, at a minimum, biannually. Samples should be obtained during the summer season (May through October) and during the winter season (November through April) to provide a complete inventory of the conditions in the Allen Creek and North Walnut Creek basins. In addition, sampling should represent periods of dry weather and post-rainfall monitoring. Levels of fecal coliform have been recorded at high levels directly after rainfall, so this monitoring is key in identification of sources of fecal coliform bacteria. If a source of fecal coliform bacteria has not been determined after periodic monitoring, the smaller tributaries should be monitored to help identify the source.

Potential Funding

There are currently several funding sources available for the county to engage in a stable monitoring schedule. Grant funding form Section 319(h) of the Clean Water Act, Nonpoint Source Implementation Grants, may be used for installation of best management practices (BMPs) for animal waste and landowner education programs. Capitalization Grants for Clean Water State Revolving Funds is a potential source of funding used to aid in urban runoff control, stormwater overflows, riparian buffers, and other water protection activities. Watershed group assistance grants are available through the Charles Mott Foundation in the development of partnerships to address water quality issues. Other matching grants may be available through the Environmental Protection Agency's Office of Water for both nonpoint source mitigation and water quality testing.

There has been some discussion about the possibility of the Department of Natural Resources, Environmental Protection Division contributing to the cost of on-the-ground restoration. Further research into possible funding sources should be continually conducted over the five-year implementation period.

Criteria to Determine Progress

Progress on the implementation plan will be determined through analysis of water quality sampling results. Periodic monitoring will show the trends of fecal coliform levels throughout the five-year period. The number of regulatory controls or BMPs implemented in the two stream segments' watersheds will also serve as a measure of progress. The implementation plan will be ultimately deemed successful if, at the end of the five-year implementation period, the fecal coliform levels in the watersheds are below the TMDL recommended in the TMDL document and the stream segments are removed form the 303(d) list.

Conclusion

The establishment of an effective TMDL implementation plan is essential tot he environmental and economic health of Hall County and the City of Gainesville. In order for areas to continue to grow, and drainage basin that has been determined to have excessive levels of fecal coliform must establish an TMDL implementation plan and make a good faith effort to meet the requirements set forth in the plan. As stated in the Clean Water Act, if the implementation plan is not efficiently executed, the county and the city could face difficulties in such development as expansion of wastewater treatment facilities and certain industries that could contribute to increased levels of fecal coliform.

The implementation of regulatory and voluntary management measures, coupled with regular monitoring of the stream segments, should reduce the levels of fecal coliform bacteria present in the water body. The plan has a five-year horizon for the restoration of acceptable levels of bacteria. If the fecal coliform levels in the stream segments are not at an acceptable level by the end of the fourth year of the plan, a second phase of the implementation plan will be developed.

STATE OF GEORGIA

REVISED TMDL IMPLEMENTATION PLAN

WATERSHED APPROACH

OCONEE RIVER BASIN

Local Watershed Governments

Georgia Mountains RDC
Hall County
City of Gainesville
City of Oakwood

TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies. **With input from appropriate stakeholder groups, a TMDL Implementation Plan has been developed for a cluster of impaired streams and the corresponding pollutants.** The impaired streams are located in the same sub-basin identified by a HUC10 code (Figure 1).

This Implementation Plan addresses an action plan, education/outreach activities, stakeholders, pollutant sources, and potential funding sources affecting the sub-basin. In addition, the Plan describes (a) regulatory and voluntary practices/control actions (*management measures*) to reduce target pollutants, (b) milestone schedules to show the development of the management measures (*measurable milestones*), (c) a monitoring plan to determine the efficiency of the management measures and measurable milestones, and (d) criteria to determine whether substantial progress is being made towards reducing pollutants in impaired waterbodies. The overall goal of the Plan is to define a set of actions that will help achieve water quality standards in the state of Georgia. Following this section is information regarding individual segments.

Allen Creek/Walnut Creek Watershed
HUC 0307010101

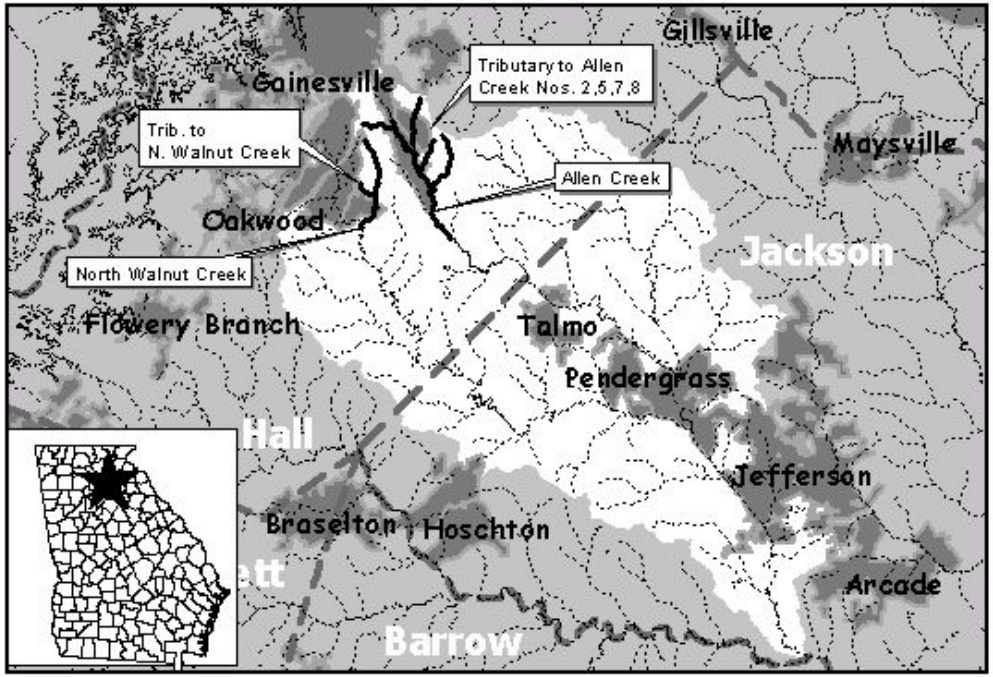

Figure 1

	Impaired Stream Location	Pollutant
1. Allen Creek	Monroe Drive to 1 mi. d/s Ga. Hwy 11, Gainesville	FC
2. North Walnut Creek	Gainesville	FC
3. North Walnut Creek	Gainesville	FC
4. Tributary 2 to Allen Creek	Gainesville—Downstream Old Landfill	FC

Impaired Waterbody*	Impaired Stream Location	Pollutant
5. Tributary 5 to Allen Creek	Gainesville	FC
6. Tributary 7 to Allen Creek	Gainesville—West Side of New Landfill	FC
7. Tributary 8 to Allen Creek	Gainesville—East Side of New Landfill	FC
8. Tributary to North Walnut Creek	Gainesville	FC

*These Waterbody Numbers are referenced throughout the Implementation Plan.

ACTION PLAN for Allen and North Walnut Creek

Table 1: Summary of Causes and Solutions for Pollution

POLLUTANT:	SOURCE:	EFFECT:	WHAT CAN I DO? At Home: Community, School	WHAT CAN I DO? At Work: Business, Government
__ Dissolved Oxygen (DO)	_X_ Industrial	__ Habitat	Help the county and city meet this TMDL by reducing fecal coliform bacteria entering the creek by doing the following:	Help the county and cities meet this TMDL by reducing fecal coliform bacteria entering the creek by doing the following:
_X_ Fecal Coliform (FC)	_X_ Urban	_X_ Recreation	• Inspect and/or fix your septic tank every 5 years • Inspect and/or fix sewage system connections to your property • Plant shrubs and water-loving trees next to your creeksides and streamsides so that stormwater runoff slows down and thus pollution gets filtered out naturally before entering stream • Refrain from cutting grass too short along streambanks • Start or help fund an Adopt-A-Stream club in your neighborhood • Write a comprehensive nutrient management plan (CNMP) for your home	• Perform a stream walk in Walnut and Allen Creeks • Inspect and/or fix all septic tanks every 5 years • Inspect and/or fix sewage system connections to private property • Plant shrubs and water-loving trees next to your creeksides and streamsides so that stormwater runoff slows down and thus pollution gets filtered out naturally before entering stream • Refrain from cutting grass too short along streambanks • Start or help fund an Adopt-A-Stream club at your business • Write a comprehensive nutrient management plan (CNMP) for your business • Gov't can make water and wastewater systems more efficient • Gov't can enforce code ordinances already in place • Gov't can review current ordinances and make adjustments if necessary
__ Sediment	_X_ Agriculture	__ Drinking Water		
__ Metals	__ Forestry	__ Aesthetics		
__ Fish Consumption Guidelines (FCG)	_X_ Residential	__ Other (list)		
Other? (Please List)	Other? (Please List)			

INFORMATION/EDUCATION/OUTREACH ACTIVITIES

An education/outreach component will be used to enhance public understanding of and participation in implementing the TMDL Implementation Plan.
List of all previous and planned information/education/outreach activities.

Table 2. Activities in Hall County

Responsible Organization Or Entity	Description	Impacted Waterbodies*	Target Audience	Anticipated Dates
Hall County / Gainesville Government	DCA's Waterfirst Program. Hall County and all cities inside the county are participating in this program.	All	Public	2003-2004
Hall County / Gainesville Government	GA EPD's NPDES Stormwater Permit - for municipalities.	All	Private and Public Sector	2003-2004
Hall County Code Enforcement	Hall County makes sure to enforce rules and codes regarding environmental laws in Hall County.	ALL	Private and Public Sector	present
Gainesville Government	Adopt-A-Stream Monitoring Program, environmental department of the city monitors streams in the city frequently	All	Public	present - unk
GMRDC	Contracted with GA EPD to provide TMDL Implementation Planning for the region.	All	GMRDC region (northeast GA)	Continuous
Georgia Forestry Commission	Conduct forestry Best Management Practices educational training at Master Timber Harvester and continuing logger education programs, civic programs, and landowner meetings.	All	Foresters, timber buyers and loggers, site preparation contractors, landowners	Continuous
USDA – Farm Service Center	Gainesville office of farming tech assistance	All	Agriculture community	Continuous
USDA – NRCS	The NRCS provides money and assistance to private landowners who wish to help conserve soil and water The NRCS is currently undergoing a survey to identify all private landowners in the watershed	All	Private landowners	Continuous
Metropolitan North Georgia Water Planning District	Hall County is a member in the District and will be responsible for implementing the rules established by the District during 2004-2008.	ALL	Private and Public Sectors	2004-2008

STAKEHOLDERS

EPD encourages public involvement and the active participation of stakeholders in the process of improving water quality. Stakeholders can provide valuable information and data regarding their community and the impaired water bodies and can provide insight and/or implement management measures.

List of local governments, agricultural organizations or significant landholders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups and individuals with a major interest in this watershed.

Table 3. Major stakeholders working and living in Allen and Walnut Creek watershed.

	Name/Organization	Address	City	State	Zip	Phone	E-Mail
1	Elachee Nature Center	2125 Elachee Drive	Gainesville	GA	30504	(770) 535-1976	elachee@elachee.org
2	Buddy Belflower	734 E. Crescent Dr	Gainesville	GA	30501-5002	(770) 536-6981	buddy.belflower@gagainesvi.fsc.usda.gov
3	Steve Payne	757 Queen City Parkway	Gainesville	GA	30501	(770) 538-2412	spayne@gainesville.org
4	Dennis Martin	3005 Atlanta HWY	Gainesville	GA	30507	(770) 531-6048	dmartin@gfc.state.ga.us
5	Augie DeAugustinis	3730 Timberlake Dr.	Gainesville	GA	30506	(678) 358-6266	AugieD@charter.net
6	Hall County Commission	P.O. Box 1435	Gainesville	GA	30503	(770) 535-8260	ggibbs@hallcounty.org
7	Society of Neighborhood Associations	3730 Timberlake Dr.	Gainesville	GA	30506	(678) 358-6266	hallcoalliance@aol.com
8	Gainesville City Council	P.O. Box 2496	Gainesville	GA	30503	(770) 535-6862	citycouncil@gainesville.org
9	Kevin McInturff	711 Green St	Gainesville	GA	30501	(770) 531-6800	kmcinturff@hallcounty.org
10	Dr. Lee Hartell						upperoconee@yahoo.com
11	GMRDC	P.O. Box 1720	Gainesville	GA	30503	(770) 538-2619	bhulsey@gmrdc.org
12	Reggie Weaver	2150 Dawsonville Hwy	Gainesville	GA	30501		Reggie_Weaver@dnr.state.ga.us
13	Billy Skaggs	734 E. Crescent Dr,St 300	Gainesville	GA	30501	(770) 531-6988	bskaggs@arches.uga.edu
14	Stephen Brinson	734 E. Crescent Dr	Gainesville	GA	30501-5002	(770) 531-6827	sbrinso7@bellsouth.net
15	Tim Callahan	450 Prior Street, SE	Gainesville	GA	30501	(770) 531-3973	tjcallahan@gdph.state.ga.us
16	Vince Williams	4220 International Prkwy	Atlanta	GA	30354	(404) 675-1614	vince_williams@mail.dnr.state.ga.us
17	Mario Delgado	734 E. Crescent Dr, Ste 100	Gainesville	GA	30501	(770) 536-0547, ext 4	mario.delgado@gagainesvi.fsc.usda.gov
18	Hall County Board of Education	3255 Montgomery Dr.	Gainesville	GA	30504	(678) 450-0530	dennis.fordham@hallco.org
19							

WATER BODIES/STREAMS COVERED IN THIS PLAN

These impaired streams are located in the same sub-basin identified by a HUC10 code. Most of the information contained in this section comes from the 303(d) list and has been completed by employees of the EPD Water Protection Branch.

Table 4. Waterbodies and TMDL details.

Waterbody Name #1		Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Allen Creek		Monroe Drive to 1 mi. d/s Ga. Hwy 11, Gainesville	9	Fishing	Partially Supporting
Primary County		**Secondary County**	**Second RDC**		**Source (Point/ Nonpoint)**
Hall County		Jackson County			Nonpoint (Urban Runoff)
Pollutants	**Water Quality Standards**		**Required Reduction**	**TMDL ID**	**Date TMDL Established**
Fecal Coliform (FC)	1,000 per 100ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)		79.8% - PS		January 2002

Waterbody Name #2		Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
North Walnut Creek		Gainesville	1	Fishing	Partially Supporting
Primary County		**Secondary County**	**Second RDC**		**Source (Point/ Nonpoint)**
Hall County					Nonpoint (Urban Runoff)
Pollutants	**Water Quality Standards**		**Required Reduction**	**TMDL ID**	**Date TMDL Established**
Fecal Coliform (FC)	1,000 per 100ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)		91.4% - PS		January 2002

Waterbody Name #3		Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
North Walnut Creek		Gainesville	2	Fishing	Partially Supporting
Primary County		**Secondary County**	**Second RDC**		**Source (Point/ Nonpoint)**
Hall County					Nonpoint (Urban Runoff)
Pollutants	**Water Quality Standards**		**Required Reduction**	**TMDL ID**	**Date TMDL Established**
Fecal Coliform (FC)	1,000 per 100ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)		39.4% - PS		January 2002

Waterbody Name #4		Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Tributary 2 to Allen Creek		Gainesville—Downstream Old Landfill	1	Fishing	Partially Supporting
Primary County		**Secondary County**	**Second RDC**		**Source (Point/ Nonpoint)**
Hall County					Nonpoint
Pollutants	**Water Quality Standards**		**Required Reduction**	**TMDL ID**	**Date TMDL Established**
Fecal Coliform (FC)	1,000 per 100ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)		47.1% - PS		January 2002

Waterbody Name #5		Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Tributary 5 to Allen Creek		Gainesville	1	Fishing	Partially Supporting
Primary County		**Secondary County**	**Second RDC**		**Source (Point/ Nonpoint)**
Hall County					Nonpoint
Pollutants	**Water Quality Standards**		**Required Reduction**	**TMDL ID**	**Date TMDL Established**
Fecal Coliform (FC)	1,000 per 100ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)		84.6% - PS		January 2002

Waterbody Name #6		Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Tributary 7 to Allen Creek		Gainesville—West Side of New Landfill	1	Fishing	Not Supporting
Primary County		**Secondary County**	**Second RDC**		**Source (Point/ Nonpoint)**
Hall County					Nonpoint
Pollutants	**Water Quality Standards**		**Required Reduction**	**TMDL ID**	**Date TMDL Established**
Fecal Coliform (FC)	1,000 per 100ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)		85% - NS		January 2002

Waterbody Name #7		Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Tributary 8 to Allen Creek		Gainesville—East Side of New Landfill	1	Fishing	Not Supporting
Primary County		**Secondary County**	**Second RDC**		**Source (Point/ Nonpoint)**
Hall County					Nonpoint
Pollutants	**Water Quality Standards**		**Required Reduction**	**TMDL ID**	**Date TMDL Established**
Fecal Coliform (FC)	1,000 per 100ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)		85.5% - NS		January 2002

Waterbody Name #8		Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Tributary to North Walnut Creek		Gainesville	1	Fishing	Partially Supporting
Primary County		**Secondary County**	**Second RDC**		**Source (Point/ Nonpoint)**
Hall County					Nonpoint (Urban Runoff)
Pollutants	**Water Quality Standards**		**Required Reduction**	**TMDL ID**	**Date TMDL Established**
Fecal Coliform (FC)	1,000 per 100ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)		90% - PS		January 2002

POLLUTANT SOURCES

It is important to recognize the potential source(s) causing water quality impairment. Each source must be controlled to comply with target TMDL/Load Allocations for each pollutant. Included is a description of how the sources contribute to the impairment and the waterbody that is impaired.

Table 5. Pollutant Sources, TCH - 2003.

	Pollutant	Sources of Pollutants	Description of Contribution To Impairment	Impacted Waterbodies*
1	**FCB**	**City Sewer System**	**Leaking pipes, exposed pipes, illicit connections, bad connections to sewer system**	**all**
2	FCB	leaking sewer systems adjacent to perennial streams	raw sewage entering stream will be a primary contributor	all
3	FCB	leaking sewer systems not adjacent to perennial streams but within watershed	raw sewage indirectly entering streams may be a secondary contributor	all
4	FCB	illicit connections	illicit (illegal) sewage directly entering streams may be a primary contributor	all
5	FCB	bad connections to system	sewage entering streams due to bad connections may be a secondary contributor	all
6	FCB	sewer overflows	sewage entering streams when storm drainage malfunctions causing overflow	all
7	**FCB**	**Wastewater**	**Wastewater discharge**	**all**
8	FCB	East Hall High School	minimal flow of wastewater	1
	FCB	White Sulfur Elem. School	very minimal flow of wastewater	2,3,8
9	**FCB**	**Wildlife**	**Deer population estimated to be 45 deer per square mile**	**all**
10	FCB	Allen Creek Wildlife Management Area	large tract of land in the middle of Allen Creek watershed, previously owned by Gainesville	1
11	**FCB**	**Agriculture - Grazing Animals**	**Cattle farms that produce waste**	**all**
12	**FCB**	**Agriculture -Poultry**	**Poultry waste**	**all**
13	**FCB**	**Failing Septic Systems**	**Leaking or failing septic systems allow human waste to enter the watershed**	**all**
14	**FCB**	**Urban Development**	**Stormwater runoff, leaks and overflows from sanitary sewer systems, illicit discharges, improper disposal of waste materials**	**all**
15	FCB	Industrial Parks	Concentration of plants and industrial facilities provide concentration of pollutant sources	all
16	FCB	Landfills	Concentration of landfills and trash facilities provide concentration of pollutants associated with bad housekeeping activities, providing urban wildlife habitat (rats), unlined landfills cannot provide surface water FCB infiltration	1, 4.,5.,6.,7

MANAGEMENT MEASURES, MEASURABLE MILESTONES AND SCHEDULE

(i.e. Local codes and ordinances, Erosion and Sedimentation Control, Storm Water Management, Local water resource monitoring)

The following table lists management measures that have been or will be implemented to achieve water quality standards and the load reductions established in the TMDL. The management measures, including regulatory or voluntary actions or other controls by governments or individuals, specifically apply to the pollutant and the waterbody for which the TMDL was written. A description is provided of how these management measures are/will be accomplished through reliable and effective delivery mechanisms, and how these management measures are/will help achieve the target TMDL. Included is the source of the pollutant, anticipated/past effectiveness of the management measure (very effective, somewhat effective, not effective), the current status (i.e. enforced, in-progress, planning), and measurable milestones and schedule. Milestones are used to measure progress in attaining water quality standards and to determine whether management measures are being implemented.

Table 6. Hall County Department of Health Septic Tank Regulations.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
County Sewage Disposal Rules and Regulations	Hall County	Septic tank permit has to be obtained from the county health department. A copy of such septic tank permit shall be furnished to the county building inspection department prior to the issuance of the building permit.	1969	current	Reg

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
FCB	septic sewage	ALL	limited to new or failing septic systems only

Measurable Milestones	Schedule		Comments
	Start	End	
			only visibly failing septic tanks are inspected post installation

Table 7. Hall County Watershed Protection Ordinance

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Watershed Protection Ordinance	Hall County	50-ft buffer along the sides of streams, lakes, and other bodies of water. 25-ft buffer shall be maintained along the sides of intermittent streams or 25 square ft drainage. Septic tanks or any kind of land disturbing construction cannot be installed within these buffers without a variance. Exemptions include agriculture, forestry, and already established structures. The city of Gainesville has not established a watershed protection ordinance, but they plan to do so after they establish a storm water utility.	4/26/01	current	Reg

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Stormwater runoff, including bacteria and sediment	Sediment, Bacteria, chemicals, trash, etc.	All	Good

Measurable Milestones	Schedule		Comments
	Start	End	

Table 8. Georgia's Oconee River Basin Management Plan

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Oconee River Basin Management Plan	GA EPD - DNR	Georgia is in the process of implementing a watershed approach to water resources management through River Basin Management Planning. River basin planning is the foundation for implementation of water protection strategies in Georgia. This approach provides the framework and schedule for actions to address the waters on the Georgia 303(d) list. The basin planning program is based on legislation in 1992 (O.C.G.A. 12-5-520) by the Georgia Assembly which calls for the GA EPD to develop river basin management plans for each of the major river basins in Georgia. The Oconee River Basin Management Plan was last revised in 1998.	1988	current	reg.

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Sediment, Bacteria, chemicals, trash, etc.	Construction, Agriculture Stormwater Runoff, Urban Stormwater Runoff, Wastewater Rx Plants	All	limited to ordinances, programs, policy. Not on-the-ground mitigation.

Measurable Milestones	Schedule		Comments
	Start	End	

Table 9. Hall County Phase II Stormwater Permit

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Phase II - NPDES	Hall County	Through the Stormwater Permitting program required by US EPA and managed by GA EPD, Hall County and the City of Gainesville have submitted to GA EPD their Notice of Intent to implement their Phase II stormwater permit, which requires certain stormwater control practices.	2003	current	Reg

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Sediment, Bacteria, chemicals, trash, etc.	Parking lots, factories, plants, manufacturing, etc	All in county	good

Measurable Milestones	Schedule		Comments
	Start	End	

Table 10. Metro North Georgia Water Planning District.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Metro North Georgia Water Planning District SB 130	Georgia and the members of the District	The Metropolitan North Georgia Water Planning District (MNGWPD) has developed a Watershed Management Plan that will affect all counties and cities in the Metro Atlanta area, which will include all of Hall County. The district watershed management planning program is based on legislation in 2001 (SB 130) that recognized the need to carefully and cooperatively manage and protect the rivers and streams of the metro regions. Each member of the district will have to implement the watershed management plans after they are approved by officials.	2002	current	Reg

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Sediment, Bacteria, chemicals, trash, etc.	Sediment, Bacteria, chemicals, trash, etc.	All in county	good, but no on-the-ground or watershed specific projects

Measurable Milestones	Schedule		Comments
	Start	End	

Table 11. Comprehensive Nutrient Management Planning Regulations.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
CNMP Writing Program	Natural Resources Conservation Service - US	Many agents of the NRCS encourage widely nutrient management planning. All NRCS agents are certified CNMP writers, Dept of Agriculture required certification.	2001	Current	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
FCB	animal farms	all	good

Measurable Milestones	Schedule		Comments
	Start	End	
CNMP writing and strong encouragement	2002-2003		NRCS encouraged this b/c of stricter rules from EPA on CAFOs and their stormwater permit or NPDES permit, ultimately home rule.

Table 12. Georgia Water Quality Control Act.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Georgia Water Quality Control Act (OCGA 12-5-20)	GA DNR EPD	Makes it unlawful to discharge excessive pollutants (sediments, nutrients, pesticides, animal waste, etc.) into waters of the State in amounts harmful to public health, safety, or welfare, or to animals, birds, or aquatic life or the physical destruction of stream habitats.	1964	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Sediments, nutrients, pesticides, and habitat	Silviculture	All	

Measurable Milestones	Schedule		Comments
	Start	End	
GFC investigates and mediates silvicultural complaints on behalf of EPD. Unresolved complaints are turned over to EPD for enforcement. Status reports can be provided to RDC as needed.	Continuous		
Agriculture CAFOs regulations	2004		
Agriculture Poultry and swine	2004		

POTENTIAL FUNDING SOURCES

Table 13. The identification of dedicated funding is important in determining the economic feasibility of the above-mentioned management measures.

	Funding Source	Responsible Authority	Status	Anticipated Funding Amount	Impacted Waterbodies*
1	Nonpoint source pollution Section 319 Grant	GA - DNR	researching		Allen Creek only
2	US EPA OSWER Innovative Project - drinking water protection	US EPA	10-1-03 due date		ALL
3	US EPA State Wetland Grant Program	US EPA	10-1-03 due date		ALL
4	Georgia State Revolving Load Fund - drinking water improvements - sewer system improvements	GEFA	currently researching		ALL
5	Sustainable Communities Grants - fast growing communities needing small grants to help plan environmental policy	PRIVATE (Jesse Smith Neyes Foundation)	currently researching		ALL
6	Toxics Grant Program - small grant program for environmental education to low-income populations or disadvantaged populations	PRIVATE (Jesse Smith Neyes Foundation)	currently researching		ALL
7	Turner Foundation	PRIVATE			ALL
8	Charles Mott Foundation	PRIVATE	applied 02 denied		ALL
9	Community Development Block Grant - GA DCA	US Dept of Housing	???	???	ALL
10	USDA EQIP program	USDA	currently applying	???	ALL
11	Water Quality Cooperative Grant	USEPA	missed deadline (May 03)	???	ALL
12	GA DCA - Discretionary Funds	GA DCA	currently obtaining FY 04	$5,000	ALL

MONITORING PLAN

The purpose of this monitoring plan is to determine the effectiveness of the target TMDL and the management measures being implemented to meet water quality standards. List of previous, current or planned/proposed sampling activities or other surveys. (Monitoring data that placed stream on 303(d) list will be provided if requested.)

Table 14. Monitoring Activities.

Name Of Regulation / Ordinance Or Management Measure	Organization	Impacted Waterbodies*	Pollutants	Purpose/Description	Time Frame		Status (Previous, Current, Proposed)
					Start	End	
Gainesville's Environmental Services Monitoring Program	City of Gainesville	All	FCB, E. coli	Testing surface water trends and hot spots in around the city			Current
GA Water Quality Reports (305)	GA DNR - USGS	All	FCB	305 reports to the US Congress on state's water quality	01/01/02	12/31/02	Current

CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE

The following set of criteria will be used to determine whether any substantial progress is being made towards reducing pollutants in impaired waterbodies and attaining water quality standards. Discussion on each criteria is recorded in the space provided. Additional relevant criteria are presented in comments.

Percent of concentration or load change (monitoring program) _____

If monitoring results show that it is unlikely that the TMDL will be adequate to meet water quality standards, revision of the TMDL may be necessary.

- Categorical change in classification of the stream (delisting the stream is the goal) _____

- Regulatory controls or activities installed (ordinances, laws) _____

- Best management practices installed (agricultural, forestry, urban) _____

COMMENTS

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